

means for illuminating the fluorometric cell with radiation;

a first optical system for collecting the radiation from the illuminating means and focusing the radiation on the fluorometric cell and the analyte therein;

a first filter positioned between the first optical system and the fluorometric cell for removing all radiation received from the first optical system except primarily radiation within a specific band that excites fluorescence associated with the analyte thereby causing the analyte to emit a fluorescent light in the fluorometric cell;

a second optical system for collecting the radiation including the fluorescent light emitted by the analyte leaving the fluorometric cell and focusing the fluorescent light on a detector;

a second filter for passing only the fluorescent light emitted by the analyte;

a detector for converting the fluorescent light emitted by the analyte into electrical current, the total charge of the current being proportional to the amount of fluorescent light that is input to the detector and, therefore, to the concentration of the analyte in the sample, thereby permitting detection and quantification of the amount of analyte in the sample;

a first operational amplifier circuit having a low pass characteristic for converting the charge of the current from the detector into a pulse;

a circuit for tracking the output of the first operational amplifier, the circuit having a low pass characteristic, and for holding a value that is a maximum in response to the pulse; and

means for digitizing and displaying the held value.

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5 38. (once amended) [The sensor as recited in claim 36, the means for measuring the fluorescence further comprising:] A sensor for detecting and quantifying the amount of an analyte in a sample, the sensor comprising:

a hand held, enclosed container;

a power supply;

digital means for automatically controlling the operation of the sensor;

an external port in the container for receiving the sample;

means for driving fluids in the sensor after the sample is received;

means for extracting the analyte from the sample comprising:

an affinity column for binding and concentrating the analyte contained in the sample;

a first reservoir containing a fluid for rinsing the affinity column clean of any dissolved or suspended material other than the bound analyte; and

a second reservoir containing an elution fluid for releasing the analyte from the affinity column; and

means for measuring the fluorescence of the extracted analyte to detect and quantify the amount of analyte in the sample, the power supply, the digital means, the means for driving fluids, the means for extracting the analyte and the means for measuring the fluorescence being located in the container, the means for measuring the fluorescence comprising:

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a fluorometric cell for receiving the analyte to be detected;

means for illuminating the fluorometric cell with radiation;

a first optical system for collecting the radiation from the illuminating means and focusing the radiation on the fluorometric cell and the analyte therein;

a first filter positioned between the first optical system and the fluorometric cell for removing radiation received from the first optical system except primarily radiation within a specific band that excites fluorescence associated with the analyte thereby causing the analyte to emit a fluorescent light in the fluorometric cell;

a second optical system for collecting the radiation including the fluorescent light emitted by the analyte leaving the fluorometric cell and focusing the fluorescent light on a detector;

a second filter for passing only the fluorescent light emitted by the analyte;
and

a detector for converting the fluorescent light emitted by the analyte into electrical current, the total charge of the current being proportional to the amount of fluorescent light that is input to the detector and to the concentration of the analyte in the sample;

a first operational amplifier circuit having a low pass characteristic for converting the electrical current from the detector into a pulse;

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